AMENDMENTS TO THE CLAIMS

Claims 1-23 (Cancelled)

Claim 24 (Currently Amended) A data transmission device connected to a connected device and connected to a ring-type data transmission network and for electrically communicating with other devices of the ring-type data transmission network via a transmission line in a unidirectional manner, such that the data transmission device receives an electric signal only from a preceding device of the ring-type data transmission network and the data transmission device transmits an electric signal only to a successive device of the ring-type data transmission network, the connected device not being any of the other devices of the ring-type data transmission network, the preceding device of the ring-type data transmission network, and the successive device of the ring-type data transmission network, the data transmission device comprising:

a processing section for processing (i) received data and (ii) data to be transmitted based on a predetermined communications protocol;

a reception section for receiving an electric signal sent from the preceding device of the ring-type data transmission network and for outputting data contained in the received electric signal to the processing section;

a transmission section for converting a result of the processing by the processing section into an electric signal and for transmitting the electric signal converted from the result to the successive device of the ring-type data transmission network;

a power supply section for supplying power to the processing section, the reception section, and the transmission section; and

a control section for controlling an operation of the processing section, the reception section, and the transmission section in accordance with an operation mode of the data transmission device,

wherein the reception section detects a cessation of the electric signal sent from the preceding device,

wherein, when the reception section detects the cessation of the electric signal sent from the preceding device, the power supply section stops supplying power to the processing section, the reception section, and the transmission section,

wherein, when one of (i) the cessation of the electric signal sent from the preceding device is detected, and (ii) the supply of power from the power supply section is stopped, the reception section stops operating, ~~and~~

wherein, when one of (i) the reception section detects the cessation of the electric signal sent from the preceding device, and (ii) the supply of power from the power supply section is stopped, the transmission section stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section to the successive device,

wherein the processing section receives data from the connected device, converts the data received from the connected device into the predetermined protocol, and transmits the converted data received from the connected device to the transmission section, and

wherein the processing section receives and processes the data output from the reception section.

Claim 25 (Previously Presented) The data transmission device according to claim 24,

wherein, when the cessation of the electric signal sent from the preceding device is detected, the reception section transmits, to the control section, a data cessation signal indicating the cessation of the electric signal, and

wherein, based on the data cessation signal transmitted from the reception section, the control section stops the operation of the processing section.

Claim 26 (Previously Presented) The data transmission device according to claim 24,

wherein, when the cessation of the electric signal sent from the preceding device is detected, the reception section transmits, to the control section, a data cessation signal indicating the cessation of the electric signal,

wherein, based on the data cessation signal transmitted from the reception section, the control section outputs a signal for stopping the operation of the reception section and the transmission section,

wherein, in response to the signal for stopping the operation of the reception section and the transmission section output from the control section, the reception section stops operating, and

wherein, in response to the signal for stopping the operation of the reception section and the transmission section output from the control section, the transmission section stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section to the successive device.

Claim 27 (Previously Presented) The data transmission device according to claim 24,

wherein, when the cessation of the electric signal sent from the preceding device is detected, the reception section transmits, to the control section, a data cessation signal indicating the cessation of the electric signal, and

wherein, based on the data cessation signal transmitted from the reception section, the control section stops the power supply section from supplying power to the processing section, the reception section, and the transmission section.

Claim 28 (Previously Presented) The data transmission device according to claim 27, further comprising a signal monitoring section for detecting the electric signal sent from the preceding device and transmitting, to the control section, an electric-signal detection signal indicating the detection of the electric signal sent from the preceding device,

wherein, when a suspended sending of the electric signal sent from the preceding device is resumed, the signal monitoring section detects the electric signal sent from the preceding device, and transmits, to the control section, the electric-signal detection signal,

wherein, based on the electric-signal detection signal transmitted from the signal monitoring section, the control section allows the power supply section to start supplying power to the processing section, the reception section, and the transmission section, to respectively start the operation of the processing section, the reception section, and the transmission section, and

wherein, by control of the control section, the transmission section starts operating and starts transmitting the electric signal to the successive device.

Claim 29 (Previously Presented) The data transmission device according to claim 28, wherein the electric signal, which the transmission section sends to the successive device after

starting operating by control of the control section, is a lock signal for establishing clock synchronization.

Claim 30 (Previously Presented) The data transmission device according to claim 24, wherein the communications protocol used by the processing section is defined by Media Oriented Systems Transport (MOST).

Claim 31 (Currently Amended) A data transmission system including a plurality of data transmission devices connected via a transmission line so as to form a ring structure, in which the data transmission devices electrically communicate with one another in a unidirectional manner, such that each data transmission device receives an electric signal only from a preceding data transmission device of the plurality of data transmission devices and each data transmission device transmits an electric signal only to a successive data transmission device of the plurality of data-transmission devices,

each respective data transmission device of the plurality of data transmission devices comprising:

a processing section for processing (i) received data and (ii) data to be transmitted based on a predetermined communications protocol;

a reception section for receiving an electric signal sent from the preceding data transmission device and for outputting data contained in the received electric signal to the processing section;

a transmission section for converting a result of the processing by the processing section into an electric signal and for transmitting the electric signal converted from the result to the successive data transmission device;

a power supply section for supplying power to the processing section, the reception section, and the transmission section of the respective data transmission device; and

a control section for controlling an operation of the processing section, the reception section, and the transmission section in accordance with an operation mode of the respective data transmission device,

wherein, in one data transmission device of the plurality of data transmission devices, the control section of the one data transmission device stops the operation of the processing section, the reception section, and the transmission section, of the one data transmission device based on a predetermined condition for shift, and the transmission section of the one data transmission device stops transmitting the electric signal, ~~and~~

wherein, in another data transmission device of the plurality of data transmission devices,

the reception section of the another data transmission device detects a cessation of the electric signal sent from the preceding data transmission device,

when the reception section of the another data transmission device detects the cessation of the electric signal sent from the preceding data transmission device, the power supply section of the another data transmission device stops supplying power to the processing section, the reception section, and the transmission section, of the another data transmission device,

when one of (i) the cessation of the electric signal sent from the preceding data transmission device is detected, and (ii) the supply of power from the power supply section of

the another data transmission device is stopped, the reception section of the another data transmission device stops operating, and

when one of (i) the reception section of the another data transmission device detects the cessation of the electric signal sent from the preceding data transmission device, and (ii) the supply of power from the power supply section of the another data transmission device is stopped, the transmission section of the another data transmission device stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section to the successive data transmission device,

wherein at least one data transmission device of the plurality of data transmission devices is connected to a connected device, such that the connected device is not a data transmission device of the plurality of data transmission devices,

wherein the processing section of the at least one data transmission device receives data from the connected device, converts the data received from the connected device into the predetermined protocol, and transmits the converted data received from the connected device to the transmission section of the at least one data transmission device, and

wherein the processing section of the at least one data transmission device receives and processes the data output from the reception section of the at least one data transmission device.

Claim 32 (Previously Presented) The data transmission system according to claim 31, wherein, in the another data transmission device,

when the cessation of the electric signal sent from the preceding data transmission device is detected, the reception section of the another data transmission device transmits, to the

control section of the another data transmission device, a data cessation signal indicating the cessation of the electric signal, and

based on the data cessation signal transmitted from the reception section of the another data transmission device, the control section of the another data transmission device stops the operation of the processing section of the another data transmission device.

Claim 33 (Previously Presented) The data transmission system according to claim 31, wherein, in the another data transmission device,

when the cessation of the electric signal sent from the preceding data transmission device is detected, the reception section of the another data transmission device transmits, to the control section of the another data transmission device, a data cessation signal indicating the cessation of the electric signal,

based on the data cessation signal transmitted from the reception section of the another data transmission device, the control section of the another data transmission device outputs a signal for stopping the operation of the reception section of the another data transmission device and the transmission section of the another data transmission device,

in response to the signal for stopping the operation of the reception section of the another data transmission device and the transmission section of the another data transmission device output from the control section of the another data transmission device, the reception section of the another data transmission device stops operating, and

in response to the signal for stopping the operation of the reception section of the another data transmission device and the transmission section of the another data transmission device output from the control section, the transmission section of the another data transmission

device stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section the another data transmission device to the successive data transmission device.

Claim 34 (Previously Presented) The data transmission system according to claim 31,

wherein, when the cessation of the electric signal sent from the preceding data transmission device is detected, the reception section of the data transmission device transmits, to the control section of the data transmission device, a data cessation signal indicating the cessation of the electric signal, and

wherein, based on the data cessation signal transmitted from the reception section of the data transmission device, the control section of the data transmission device stops the power supply section of the data transmission device from supplying power to the processing section, the reception section, and the transmission section, of the data transmission device.

Claim 35 (Previously Presented) The data transmission system according to claim 34,

wherein each data transmission device of the plurality of data transmission devices further comprises a signal monitoring section for detecting the electric signal sent from the preceding data transmission device and transmitting, to the control section, an electric-signal detection signal indicating the detection of the electric signal sent from the preceding data transmission device,

wherein, in one data transmission device of the plurality of data transmission devices, based on a predetermined return condition, (i) the control section allows the power supply section to start supplying power to each processing section, reception section, and transmission

section that is in a stopped state to respectively start the operation of each processing section, reception section, and transmission section that is in the stopped state, and (ii) the transmission section resumes the transmission of the electric signal, and

wherein, in another data transmission device of the plurality of data transmission devices,

when a suspended sending of the electric signal sent from the preceding data transmission device is resumed, the signal monitoring section detects the electric signal sent from the preceding data transmission device, and transmits, to the control section of the another data transmission device, the electric-signal detection signal,

based on the electric-signal detection signal transmitted from the signal monitoring section, the control section allows the power supply section to start supplying power to the processing section, the reception section, and the transmission section of the another data transmission device to respectively start the operation of the processing section, the reception section, and the transmission section, of the another data transmission device, and

the transmission section of the another data transmission device starts operating and starts transmitting the electric signal to the successive data transmission device.

Claim 36 (Previously Presented) The data transmission system according to claim 35, wherein the electric signal, which each respective transmission section of the plurality of data transmission devices sends to the successive data transmission device after starting operating by control of the respective control section, is a lock signal for establishing clock synchronization with each respective transmission section.

Claim 37 (Previously Presented) The data transmission system according to claim 36, wherein the data transmission device of the plurality of data transmission devices that resumes the transmission of the electric signal based on the predetermined return condition is a master, which performs data transmission using a clock thereof and is connected to the data transmission system.

Claim 38 (Previously Presented) The data transmission system according to claim 31, wherein the communications protocol used by the processing section is defined by Media Oriented Systems Transport (MOST).

Claim 39 (Currently Amended) A data transmission method in which a plurality of nodes are connected via a transmission line so as to form a ring structure, in which the nodes electrically communicate with one another in a unidirectional manner, such that each node receives an electric signal only from a preceding node of the plurality of nodes and each node transmits an electric signal only to a successive node of the plurality of nodes, the data transmission method comprising:

a processing step, performed by each node, of processing received data and processing data to be transmitted based on a predetermined communications protocol;

a reception step, performed by each node, of receiving an electric signal sent from the preceding node and sending data contained in the received electric signal to the processing step;

a transmission step, performed by each node, of transmitting a result of a process by the processing step to the successive node as an electric signal;

a power supply step of supplying power used for an operation of the processing step, the reception step, and the transmission step; and

a control step, performed by each node, of controlling an operation of the processing step, the reception step, and the transmission step in accordance with an operation mode,

wherein, in one node of the plurality of nodes, the control step stops the operation of the processing step, the reception step, and the transmission step, of the one node based on a predetermined condition for shift, and the transmission step stops transmitting the electric signal, ~~and~~

wherein, in another node of the plurality of nodes,

the reception step detects a cessation of the electric signal sent from the preceding node,

when the reception step detects the cessation of the electric signal sent from the preceding node, the power supply step stops supplying power used for the operation of the processing step, the reception step, and the transmission step,

when one of (i) the cessation of the electric signal sent from the preceding node is detected and (ii) the supply of power by the power supply step is stopped, the reception step stops operation, and

when one of (i) the reception step detects the cessation of the electric signal sent from the preceding node and (ii) the supply of power by the power supply step stops supplying power, the transmission step stops operation and stops transmitting the electric signal to the successive node,

wherein at least one node of the plurality of nodes is connected to a connected device, such that the connected device is not a node of the plurality of nodes.

wherein the processing section of the at least one node receives data from the connected device, converts the data received from the connected device into the predetermined protocol, and transmits the converted data received from the connected device to the transmission section of the at least one node, and

wherein the processing section of the at least one node receives and processes the data output from the reception section of the at least one node.

Claim 40 (Previously Presented) The data transmission method according to claim 39, wherein, in the another node,

when the cessation of the electric signal sent from the preceding node is detected, the reception step sends, to the control step, a notification indicating the cessation of the electric signal, and

based on the notification sent by the reception step, the control step stops the operation of the processing step.

Claim 41 (Previously Presented) The data transmission method according to claim 39, wherein, in the another node,

when the cessation of the electric signal sent from the preceding node is detected, the reception step sends, to the control step, a notification indicating the cessation of the electric signal,

based on the notification sent by the reception step, the control step sends a notification for stopping the operation of the reception step and the transmission step,

in response to the notification for stopping the operation of the reception step and the transmission step sent by the control step, the reception step stops operation, and

in response to the notification for stopping the operation of the reception step and the transmission step sent by the control step, the transmission step stops operation and stops transmitting the electric signal to the successive node.

Claim 42 (Previously Presented) The data transmission method according to claim 39,

wherein, in the another node, when the cessation of the electric signal sent from the preceding node is detected, the reception step sends, to the control step, a notification indicating the cessation of the electric signal, and

wherein, in the another node, based on the notification sent by the reception step, the control step stops the power supply step from supplying power used for the operation of the processing step, the reception step, and the transmission step.

Claim 43 (Previously Presented) The data transmission method according to claim 42,

wherein each node of the plurality of nodes further comprises a signal monitoring step of detecting the electric signal sent from the preceding node and sending, to the control step, a notification indicating the detection of the electric signal,

wherein, in one node of the plurality of nodes, based on a predetermined return condition, (i) the control step allows the power supply step to start supplying power used for the operation of each processing step, reception step, and transmission step that is in a stopped state to respectively start the operation by each processing step, reception step, and transmission step that

is in the stopped state, and (ii) the transmission step resumes the transmission of the electric signal, and

wherein, in another node of the plurality of nodes,

when a suspended sending of the electric signal sent from the preceding node is resumed, the signal monitoring step detects the electric signal sent from the preceding node, and sends, to the control step, the notification indicating the detection,

based on the notification indicating the detection sent by the signal monitoring step, the control step allows the power supply step to start supplying power used for the operation of the processing step, the reception step, and the transmission step to respectively start the operation by the processing step, the reception step, and the transmission step, and

the operation by the transmission step is started to start the transmitting of the electric signal to the successive node.

Claim 44 (Previously Presented) The data transmission method according to claim 43, wherein the electric signal, which each respective transmission step of each node sends to the successive node after starting operation by control of the respective control step, is a lock signal for establishing clock synchronization with each respective node.

Claim 45 (Previously Presented) The data transmission method according to claim 44, wherein the node that resumes the transmission of the electric signal based on the predetermined return condition is a master, which performs data transmission using a clock thereof.

Claim 46 (Previously Presented) The data transmission method according to claim 39, wherein the communications protocol used by the processing step is defined by Media Oriented Systems Transport (MOST).